



3. PROJECT OBJECTIVES

3.1 PROJECT TASKS AND SAMPLING OBJECTIVES

The EPA tasked START to prepare this SAP to support the environmental data collection activities needed to document implementation and completion of the removal assessment. The purpose of data collection procedures presented in this SAP is to determine the number, location, and type of proposed sampling; field sample collection and laboratory analytical methods and procedures; and data quality assurance and validation procedures. The primary objectives for this AUM removal assessment are to generate definitive and screening level data that will be utilized to:

1. Determine the potential threat to human health or the environment from AUM waste (assessed as elevated gamma activity levels) at the site which exceed the proposed action level protective of human health;
2. Determine the lateral ground surface boundaries where elevated gamma radiation activity is present at the site;
3. Evaluate the vertical subsurface extent (up to 10 feet bgs) where elevated gamma radiation activity is present at the site; and
4. Determine the typical background levels for gamma radiation activity in areas surrounding the site.

3.2 INVESTIGATION AND ACTION LEVELS

The investigation level for gamma radiation activity in soils will be based on field identified background levels and represented in counts per minute (cpm). Ra-226 is the contaminant of potential concern (COPC) at the site. The action level for Ra-226 in soil will be based on the sum of the background concentration of Ra-226 and the EPA Preliminary Remediation Goal (PRG) of 1.21 picocuries per gram (pCi/g). The PRG is based on Ra-226 and its daughter progeny in residential soil and an estimated excess cancer risk of 1 in 10,000 (10^{-4}) (EPA 2010). Exposure pathways considered include incidental ingestion of soil, inhalation of particulates emitted from soil, external exposure to ionizing radiation, and consumption of fruits and vegetables. This standardized PRG is based on default exposure parameters and incorporate exposure factors that present reasonable maximum exposure selected to be protective of human health for most site conditions. The investigation and action levels are presented in Table 3-1.

**Table 3 -1. Benchmarks and Data Quality Indicator Goals**

Analyte	Background Concentration ¹	Site-Specific Action Level	EPA PRG (pCi/g)	Reporting Limit	Accuracy (% Recovery for MS/MSD)	Precision (RPD from MS/MSD and Duplicates)	Percent Completeness
Gamma radiation activity ²	To be determined (cpm)	Background (cpm)	NA	0.1 cpm with a detection range from 0.1 to 999,000 cpm	NA	20%	90
Ra-226	To be determined (pCi/g)	Sum of Background and EPA PRG (pCi/g)	1.21	1.00 (pCi/g) Test America – St. Louis	NA	35%	90

Notes:

- cpm count per minute
- EML Environmental Measurements Laboratory
- HASL Health and Safety Laboratory
- MS/MSD Matrix Spike/Matrix Spike Duplicate
- NA Not applicable
- pCi/g picocuries per gram
- PRG EPA Preliminary Remediation Goal (August 2010)
- Ra-226 Radium isotope number 226
- RPD Relative Percent Difference
- 1 Background gamma radiation activity and Ra -226 concentration in soil will be determined during field activities and laboratory analysis.
- 2 All field instruments will be included in the quality control program to document that the instruments are operating within specified control limits. The background and gamma source control limits will be established based on plus or minus 20 percent of the respective average activity rates, determined according to the instrument field operating procedures.

3.3 DATA QUALITY INDICATORS (DQIS)

Data quality indicators (DQIs) are defined as: precision, accuracy, representativeness, completeness, comparability, and method detection limits. The DQIs for this project were developed following the guidelines in the EPA Requirements for Quality Assurance Project Plans (EPA 2001). All gamma radiation survey and soil sampling procedures are documented in Sections 6.2 through 6.5. Standard operating procedures (SOPs) will be followed to ensure representativeness of gamma radiation survey and soil sample results by obtaining characteristic measurements and samples. Approved EPA methods and standard reporting limits will be used whenever possible. All data not rejected will be considered complete. Table 3 -1 documents the site-specific DQI goals for the COPCs.

3.4 DATA QUALITY OBJECTIVES (DQOS)

The DQO process as set forth by U.S. EPA guidelines (U.S. EPA 2006) was followed to establish the DQOs for this project. Based upon the DQO process, this removal assessment will involve the generation of quantitative field screening data to document gamma radiation activity levels in surface and subsurface soils, and AUM waste. Additionally, this removal assessment will involve the generation of quantitative definitive analytical data to document Ra -226 concentrations in surface and subsurface soils. Analytical methods approved by the EPA will be



used to generate all field screening and definitive analytical data used to support this removal assessment. The specific requirements for field screening and definitive analytical data are detailed in Section 9.0.

3.5 SCHEDULE OF FIELD ACTIVITIES

Field activities are anticipated to begin on August 11, 2014 and continue for up to 10 days.

3.6 SPECIAL TRAINING REQUIREMENTS/CERTIFICATIONS

The operation of the field analytical instruments requires specialized training that will be administered, prior to mobilization, to all START personnel scheduled to be on site.

Field sampling personnel should be trained and have experience with soil sampling at hazardous waste sites while wearing appropriate protective equipment. One field sampler will be trained and familiar with Global Positioning System (GPS) data collection. All sampling personnel will have appropriate training that complies with 29 Code of Federal Regulations 1910.120. The site-specific health and safety plan for this project is included in Appendix C.

Analytical laboratories and laboratory personnel require specialized training, certification and experience. WESTON project management must determine and verify these requirements prior to the use of any laboratory resource(s). Data validation requires specialized training and experience. The START quality control (QC) Coordinator will determine and verify a qualified data validation resource prior to data validation.